

XXI. *On a Collection of Butterflies made in Morocco, in 1900-01-02.* By E. G. B. MEADE-WALDO. (Communicated by H. J. ELWES, F.R.S., etc.)

[Read October 18th, 1905.]

Plates XVIII, XIX.

THOUGH the butterflies of the neighbourhood of Tangier and of some other points on the coast of Morocco have been collected by the late Mr. J. H. Leech and Mr. J. J. Walker, yet no really important collection has been made in this little-explored country. The following collection was made during an eighteen months' residence in Morocco. Collecting at and in the neighbourhood of Tangier, viz. within 20 miles, and on a long excursion which started from Tangier on May 8th, 1901, and lasted until August 21st. We went by way of Bushārin to Rabat, thence by Fedulla, and striking inland over the central plains to Beni Meskin, crossed the Ouad Moorbey, Oom-er-riebia of the maps, and went eastward, spending some time at a tiny tent village on the désert called Oolad Lasara. Throughout the central plains the heat was great, often reaching 116° in the shade, with hot nights, and owing to this, and also to a previous visitation of locusts which had consumed almost all vegetation, nothing much could be done except on the banks of the river. From here we went slowly south to Marrākesh (Morocco City), and then into the Great Atlas, which we entered at Agūrgūr; from here we went, first southward until we struck the valley of the Ouad Nyfys, which we followed until we got to the watershed above Tsigidir-elbor, then retracing a short way struck westward until we reached the "Amsmiz." Here we encamped for some time at a Berber village called Sould Jedid, which was delightfully situated about 6,000 feet up, and with most pleasant inhabitants. The mountains here only rise to about 9,000 feet and are to a considerable extent covered with damp forest on their northern slopes; this forest consists largely of Arar (*Callitris quadrivalvis*), Prickly Oak, Holly, *Laurus-tinus*, *Arbutus*, etc. We did not come to Pine (*Pinus halepensis*) until we reached the Imentalla valley a day's journey further on. After spending some days collecting in this neighbourhood, we started light, with only a little

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food, our mules and one pack mule, up a lateral valley so as to get nearer to a great peak, which the natives called Tizi Gourzá, but which according to Thompson's map must be Jebel Ogdimt. We bivouacked at the last hamlet at the top of this valley, a place called Imi Ouern. This place, which appeared to be "the end of all things," would have been splendid for a prolonged stay, but no food could be procured, shooting was not safe, and we were a very small party. It was most beautifully situated and appeared to be highly productive in butterflies and moths. We ascended the mountain and made a most interesting collection of butterflies; from here we returned to Imentalla, and by slow stages worked our way northward and westward by way of Anzoot and Tafegar to Mogador, which we reached on August 21st. In the early spring of 1902 I paid a visit to the forest of Marmora, the only tract of primæval forest in the north of Marocco. It lies between the Seboo and Bou-reg-reg, east of Rabat. It is entirely unexplored, and would probably be very productive, it is however populated only by bandits, and anything like shooting or collecting is almost impossible. However, I managed to collect a considerable number of moths, and a few butterflies. The primary object of these excursions were ornithological, but I collected both butterflies and moths all the time, and paid special attention to the high mountain species. An analysis of this list will show how very few species there are in these remote regions that are not also to be found in the Mediterranean region, and that these mountains have developed comparatively few Alpine species.

I was accompanied on both these excursions by M. Henri Vaucher of Tangier, as taxidermist and interpreter. M. H. Vaucher is a Swiss gentleman who has lived most of his life in Marocco, is an enthusiastic naturalist himself, and such success as attended these expeditions is almost entirely due to his great tact and intimate knowledge of how to treat the extremely difficult inhabitants of this fascinating country. It is to Mr. H. J. Elwes that I must tender my thanks for the trouble he has taken in going over the collection of butterflies and in assisting me with naming those that are new, and to Sir George Hampson for going through and naming the moths.*

* The remarks by Mr. Elwes are in brackets signed "H. J. E."

1. *Papilio podalirius*, L. and var. *feisthameli*, Dup.
March 12th, 1901, bred, fed on Cherry.

Tangier, March 22nd, 1901. Amsmiz, June 27th, 1901.
Imentalla, 5,500 feet, July 9th, 1901.

Is universally distributed, and on the wing the whole summer, very fond of the tops of low mountains of about 5,000 ft. elevation, where it may be seen in numbers on the leeward side during the heat of the day. The larva feeds on Cherry. Both *P. podalirius* and var. *feisthameli* occur at Tangier in March.

2. *P. machaon*, L.

Tangier, January 19th, 1901. Just emerged. Amsmiz, June 27th, 1901. Tangier, August 29th, 1901. Forest of Marmora, March 28th, 1902.

On the wing at intervals from January until September.

3. *Thais rumina*, L.

Tangier, February 27th, 1901. Tangier, April 3rd, 1901. Tangier, March 9th, 1901. Tangier, March 19th, 1901 (var. *canteneri*, Hey.).

This variety is not very uncommon late in the season, and only occurs as far as I could see in the ♀. The perfect insect is only on the wing from the end of February until the beginning of April. Feeds on *Aristolochia baetica*.

4. *Picris brassicae*, L.

Only taken at Tangier in all months from December to August. I did not see it on the wing in the summer anywhere in the central plains.

Tangier, January 17th, 1900, December 25th, 1900; August 26th, 1901; January 17th, 1902.

["The specimens are large but do not approach var. *cheiranthi*, Hübn., and the seasonal differences are slight.

"The form known as var. *vollastoni*, Butler, from Madeira closely resembles some of these."—H. J. E.]

5. *Picris rapae*, L.

On the wing all the year round in the north. I did not see it in the Great Atlas, but throughout the plains wherever there was moisture diminutive forms were ubiquitous in summer.

Tangier, March 13th, 1901. Klatsa, May 13th, 1901. Saffi, August 27th, 1901.

6. *Pieris daplidice*, L.

Universal in summer, taken only in the Atlas from 6,500 to 9,000 ft. in July in the central plains. I saw many diminutive individuals.

Wad Moorbey, June 16th, 1901. Sould Jedid, July 3rd, 1901. Tsauritz Entsagauz, 9,000 feet, July 13th, 1901.

7. *Euchloe belemia*, Esp.

Extremely abundant and universal, and on the wing almost the whole year. I did not see many in the height of the summer.

Tangier, December 8th, 1900; March 13th, 1902.

8. *Euchloë eupheno*, Esp., and var. ♀ *androgyne*, Leech.

(Plate XIX, fig. 7, var. ♀ *androgyne*.)

Extremely abundant and universal during March and April in the north of Marocco. I saw very few in the forest of Marmora, and the only one, a ♀, which I caught, is an *androgyne*.

Tangier, March 9th, 1901. Tangier, April 15th, 1901. Hawara, May 4th, 1901. Forest of Marmora, March 28th, 1902, ♀, var. *androgyne*, Leech.

9. *Tetracolus daiva*, Klug., var. *nouna*, Luc.

(Plate XIX, fig. 8, ♂, 9, ♀.)

I only saw this species at Agürgür, where it was abundant in a damp wood at an elevation of about 3,500 ft. I saw one torn specimen near Tsigidir-el-Bor about 30 miles south.

Agürgür, June 24th, 1901. Tsigidir-el-Bor, June 25th, 1901.

10. *Colias edusa*, L.

On the wing practically all the year. Extremely abundant in summer, var. *helice*, Hübn., not uncommon. I took one specimen with one forewing, *helice*, the other normal. Very variable.

Tangier, December and January. Interior, May and June.

11. *Gonepteryx rhamni*, L.

Is common in the north of Marocco, a very large form. I did not see any in the south; it is on the wing at intervals during the winter and spring, and again in the

late summer; both it and the next species feed on *Rhamnus alaternus*.

Tangier, March 22nd, 1901. Tangier, December 23rd, 1902.

12. *Gonepteryx cleopatra*, L.

Is commoner, and more widely distributed than the last. I saw it throughout the country.

Tangier, January 1st, 1901. Fedulla, May 28th, 1901. Moorbey, June 5th, 1901. Sould Jedid, 6,500 feet, July 1901.

13. *Charaxes jasius*, L.

Locally common, somewhat of a mountain species, but the males travel long distances; frequents fig-trees when the fruit is ripe and becomes stupefied. A few on the wing in April and May, and common in August and September. Some specimens are very large.

Tangier, August 16th, 1901, September 15th, 1901.

14. *Pyrameis atalanta*, L.

On the wing nearly all the year.

Tangier, Feb. 16th, 1901. Tangier, March. Ansmiz, June 19th, 1901. Imentalla, 5,500 feet, July 8th, 1901.

15. *Pyrameis cardui*, L.

On the wing all the year, late autumn brood small and dark.

16. *Vanessa c. album*, L.

I saw two or three specimens high up on Tizi Gourzá, and took one somewhat worn, large pale specimen on July 11th, at about 12,000 feet.

["I am not aware that this has been taken in North Africa before."—H. J. E.]

17. *Melitæa didyma*, O.

I did not see this species until I got to Rabat, after that I saw it at intervals throughout the country, both in the plains and at a considerable height in the mountains.

Rabat, May 16th. Agürgür, July 6th, 1901. Tsaauritz Entsaugauz, 9,000 feet, July 4th.

["This form agrees with the specimens from Kabylia and the oasis of Biskra known as var. *deserticola*, Obth.; it does not vary appreciably between the plains and high mountains."—*H. J. E.*]

18. *Argynnis lathonia*, L.

I only saw this in the Atlas, where it was not uncommon. Sould Jedid, July 1901. Tsauritz Entsagauz, July 1901.

19. *Argynnis pandora*, Schiff.

I only saw two worn specimens in the north of Marocco; it is certainly scarce on the low ground; it was abundant in the Great Atlas, and I saw it at an elevation of over 12,000 feet.

Sould Jedid, July 2nd, 1901. Tizi Gourzá, July 11th, 1901.

20. *Melanargia ines*, Hoffm.

I only saw it at one spot on the leeward side of a stony peak, everywhere else the following was abundant.

Tsauritz Entsagauz, July 6th, 1901.

21. *Melanargia lucasi*, Ramb.

Abundant in the Great Atlas, most frequent in the woods.

Tsauritz Entsagauz, July 4th. Imentalla, July 8th, 1901. Sould Jedid, July 2nd.

A very large and pale form was taken in the central plains in June, and also on the high table-land above Agürgür, on June 23rd.

22. *Satyrus briseis*, L.

Locally common high up in the Atlas, but not on the highest tops.

Tizi Gourzá, July 11th, 1901, about 9,000 feet.

["Very variable, and large, under-side of hind-wing very strongly marked."—*H. J. E.*]

23. *Satyrus semele*, L.

I only saw a few in the mountain woods.

Imentalla, July 6th, 1901. Tsauritz Entsagauz, July 4th, 1901.

24. *Satyrus mnischei*, H. S., var. *maroccana*, Meade-Waldo, n. var.

Plate XIX, fig. 3, ♂, 4, ♀)

With the exception of one individual I only saw this insect on one stony slope at the top of one of the peaks of Tsauritz Entsagauz. There it is abundant.

Tsauritz Entsagauz, July 6th and 7th, 1901, 9,000 ft.

["The occurrence of a form of this purely eastern group so far from any region where any have been previously found is very curious, but it may be constantly distinguished from the Syrian or Persian forms, by the different form of the sexual band on the fore-wing of the ♂, which instead of forming a broad velvety patch of raised scales extending almost to the hind margin of the fore-wing, as in the Syrian form of the species, is a comparatively narrow band. Another point of distinction is in the cilia of the hind-wings which are very much less scalloped than in *mnischei* or in the various forms of *S. pelopea*. On the under-side, though the median bands of the fore-wing are better marked than usual, yet the position of all markings are identical in Syrian specimens, and I do not therefore think it justifiable to treat this as a distinct species."—*H. J. E.*]

25. *Satyrus abd-el-kader*, Pier.

I saw this fine insect commonly on Tizi Gourzá, but on such bad ground I was only able to take two worn females.

Tizi Gourzá, July 11th, 1901.

26. *Satyrus actæa*, Esp.

Was common and only just on the wing in the Great Atlas, at from 8,000 to 10,000 ft. mostly on open ground.

Tsauritz Entsagauz, July 6th, 1901, also on Tizi Gourzá.

27. *Pararge mæra*, L.

I only saw a few specimens on Tizi Gourzá, and nowhere else in Marocco. I am not aware that this species has been taken previously in North Africa.

Tizi Gourzá, at about 10,000 ft., July 11th, 1901.

28. *Pararge megæra*, L.

Not by any means abundant, but out at intervals throughout the year.

Tangier, December 3rd, 1900. Tsaauritz Entsaagauz
July 4th, 9,000 ft.

29. *Epinephile jurtina*, L., var. *fortunata*, Alph.

Very generally distributed all through the summer.

Klatsa, May 14th, 1901. Ras Doura, May 19th, 1901.
Tsaauritz Entsaagauz, July 7th.

30. *Epinephile lycæon*, Kühn, var. *mauritanicus*, Ober.,
also var. *lupinus*, Costa.

Common in the Atlas woods. Not seen anywhere else.

Tsaauritz Entsaagauz, July 6th, 1901. Imentalla, July
9th, 6,500 ft.

31. *Epinephile ida*, Esp.

Common all the summer and universally distributed.

Rabat, May 25th, 1901. Tsaauritz Entsaagauz, July 4th.
Tangier, Sept. 1901.

32. *Epinephile pasiphaë*, Esp.

Very common but local. I did not see it in the south.

El Mediar, May 11th, 1901. Klatsa, May 13th, 1901.

33. *Cænonympha arcanioides*, Pierr.

Locally common in the north of Morocco. I did not see
it in the south:

Hawara, April 1901. El Mediar, May 12th, 1901.

34. *Cænonympha fettigi*, Obth.

I only saw this insect at one spot above Imentalla,
where however it was abundant.

Imentalla, 5,500 ft, July 8th and 9th, 1901.

35. *Cænonympha pamphilus*, L.

I took typical *C. pamphilus*, in the plains of the north
of Morocco in May 1901, also on the downs by the sea
between Mehedia and Rabat in March 1902.

In spring in the north of Morocco, where there appears
to be no summer brood.

36. *Cænonympha lyllus*, Esp.

Very numerous south of Rabat, and throughout the
south of Morocco, ascending the Great Atlas to at least
10,000 ft. during the summer.

Imentalla, July 9th, 1901, 5,500 ft. Amsmiz, June 16th, 1901.

37. *Ceonymphe vaucheri*, Blachier. Bull. Soc. Ent. France, 1905, p. 213. (*C. meade-waldoi*, n. sp. Elwes MS.)*

Plate XIX, fig. 1, ♂, 2, ♀.

It was abundant on the more barren stony places near the top, but none occurred amongst the broom-covered slopes lower down.

Fairly common on Tsaunitz Entsagauz, and very abundant on Tizi Gourzá up to the top of the mountains. Seen nowhere else. Tsaunitz Entsagauz, July 6th. Tizi Gourzá, July 11th, 1901.

I may incidentally add that the top of Tizi Gourzá is entirely stone boulders and great slabs of rock for the last 500 ft., and on reaching the extreme summit we saw a hollow place beneath a great slab, in this were some bits of rag held down by stones, and from the top fluttered some white rags from a stick jammed in between the rocks. It was a holy place, and our susi, Hammoo, the only one of our Moors who would accompany us, crept in, lay down on his face and prayed.

[“This is a very distinct species which can be mistaken for no other, and on account of the extreme difficulty of reaching the place where it was found is likely to remain very rare in collections. I do not know with what species to compare it, and as the figures will show its characters better than any description I will only say that it seems to be the most Alpine species found in the Southern Atlas, for although Mr. Meade-Waldo saw many other insects as high up on the mountain, he never saw this butterfly except at a very considerable elevation, certainly not below 8,500 ft.”—*H. J. E.*]

38. *Thecla ilicis*, Esp., var. *mawritanica*, Stgr.

Abundant everywhere where cork oak and prickly oak occur.

Bushārin, May 16th. Ras Doura, May 18th. Tsaunitz Entsagauz, 1901.

* Mr. Meade-Waldo's specimens of this new and very interesting Satyrid in the Natural History Museum, from which the figures on Plate XIX have been drawn, agree in all respects with M. Blachier's description of *C. vaucheri*, and I have therefore adopted this name.—*J. J. W.*

["This seems to agree best with the form described by Staudinger from North Africa '*minor subtus obscurior fere unicolor*,' but it varies greatly, and some specimens might be referred to *T. acaciæ*."—*H. J. E.*]

39. *Callophrys rubi*, L.

I only saw it in the north of Marocco, where it was common in early spring almost everywhere.

Tangier, March 26th, 1901; March 13th, 1902.

40. *Chrysophanus thersamon*, Esp., var. *omphale*, Klug.

I only took one worn specimen on the outskirts of Marocco City on June 12th. This species has not, as far as we know, been previously taken in Africa.

41. *Chrysophanus alciphron*, Rott., var. *gordius*, Sulz.

I only saw it in the Atlas, where it did not seem common; it was probably going over, as I only took two specimens that were fresh.

Tizi Gourzá, July 11th. Tsauritz Entsigauz, July 6th, 1901.

["This also has not previously been recorded from North Africa; the male has no violet sheen on the upper surface."—*H. J. E.*]

42. *Chrysophanus phleas*, L.

Common and universal, extremely abundant locally, subject to great variation, and is out all the year.

Tangier, March 10th, 1901. Tangier, Feb. 27th, 1901. Marrākesh, June 10th, 1901.

43. *Thestor mauritanicus*, Luc.

Common, but extremely local; is on the wing for only a short time in early spring.

Tangier, March 11th. Bubāna, March 27th. Hawara, April 4th, 1901. Larva feeds on the pod of a leguminous plant.

44. *Thestor ballus*, Fabr.

Is as the last, but not quite so local, and is also on the wing earlier and a little later.

Tetuan, January 16th. Tangier, March 6th. Hawara, April 4th, 1901.

45. *Lampides beticus*, L.

Fairly common and on the wing all the summer. I saw a worn specimen in December 1900.

46. *Lampides telicanus*, Lang.

Commoner than the last, and out earlier.

Tangier, July 13th. Rabat, May 26th. Rehamma, June 9th, 1901.

47. *Lampides theophrastus*, Fabr.

I only saw this species south of Ouad Moorbey from where it reached the foothills of the Atlas, and was abundant wherever the Jujube bush (*Zizyphus lotus*) grew.

Moorbey, June 6th. Anzoot, July 14th, 1901.

48. *Lampides jesus*, Guér.

The distribution the same as the last, but most common in the valley of the Ouad Moorbey.

Moorbey, June 5th. Below Agürgür, June 21st, 1901.

49. *Lycæna lysimon*, Hübn.

I saw a few at Busharin, and it swarmed over some pools of water outside Marrákesh.

Busharin, May 16th. Marrákesh, June 12th. Amsmiz, June 27th, 1901.

50. *Lycæna baton*, Berg., var. *abencerragus*, Pier.

I only saw one specimen below Sould Jedid.

Amsmiz, June 28th, 1901.

51. *Lycæna icarus*, Rott.

Fairly universal, but not remarkably common. From Tangier in August, and various places up to 9,000 feet.

Tangier, August 17th. Busharin, May 16th. Sould Jedid, July 13th. Imentalla, July 8th, 1901.

[“Many specimens have spots on the hind margins, and might be called var. *celina*, Aust., but this var. is evidently inconstant.”—H. J. E.]

52. *Lycæna astrarche*, Bergstr.

Almost universal at all elevations, and in the plains, positively swarming in some woods.

Bershid, May 30th. Imentalla, July 9th. Oquad Moorbey, June 9th. Tangier, April 3rd, 1901. Only found in summer, and as usual in hot regions very brown below (var. *calida*, Bell).

53. *Lycæna hylas*, W. V.

I only saw this butterfly on Tsauritz Entsagauz, and at Imentalla, where it was extremely abundant on the top, of a low mountain, 5,500 feet.

Imentalla, July 8th, 1901.

(Plate XIX, fig. 5, ♂, 6, ♀.)

[“Var. *atlantica*, Elwes, n. var.

“This is quite an unexpected discovery in Marocco, and a very interesting one, because though a variety of this species occurs in the higher region of the Sierra Nevada, and in some places in the mountains of eastern Spain, yet the male of this form (*nivescens*, Kef.) is of a grey-blue colour above, whilst the colour of the male of *atlantica* is to my eye like that of typical *hylas*, though Mr. Meade-Waldo sees a difference.

“Some males have marginal black spots on the hind-wing above, and both sexes have the white stripe on hind-wing beneath, broad and well marked. All the females have a broad band of orange marginal markings on the fore-wings which I have never seen so well marked in any European *hylas*.”—*H. J. E.*]

54. *Cyaniris argioides*, L.

Appears first in February, and at intervals throughout the summer.

Tangier, February 20th. Amsmiz, June 26th. Tangier, August 28th, 1901.

55. *Adopæa thauwas*, Hübn.

Tsauritz Entsagauz, 9,000 ft., June 1901. Common.

56. *Adopæa actæon*, Rott.

Ras Doura, May 1901. Common.

57. *Adopæa hamza*, Obth.

Rabat, May 26, 1901. Common.

58. *Parnara zelleri*, Led.

Local and scarce, frequents wet places in woods, flies extremely fast.

Bashasin, May 20th. Tangier, August 30th, 1901.

59. *Parnara nostradamus*, Fab.

Extremely abundant locally in late summer in open stony places.

Tangier, August 28th, September 2nd, 1901.

60. *Carcharodus alceæ*, Esp.

Imentalla, 5,000 ft. July 1901, Common.

61. *Carcharodus althææ*, Hübn.

Plains of Marocco, rather scarce.

Mehedia, May 1901.

62. *Hesperia ali*, Obth.

I only saw a few on low ground.

Tangier, August 30th, 1901.

63. *Hesperia serratulæ*, Ramb.

["Though I do not profess to know how *serratulæ* can with certainty be distinguished from *alveus* without studying the genitalia, which in this case I have not done, yet these specimens from Imentalla and Agürgür appear to me to belong to *serratulæ*, though according to Staudinger *onopordi* of Rambur is the form found in Marocco."—*H. J. E.*]

Moths collected in Marocco. By E. G. B. MEADE-WALDO.

ARCTIADÆ.

ARCTIANÆ.

1. *Euprepia cribraria*, Linn., Syst. Nat., i, p. 507 (1758).

Forest of Marmora. The variety *punctigera*, Fr., *L. candida*, Cyr.

March 26th, 1902. Ensar, Kabyla amar, Forest of Marmora.

2. *Arctia villica*, Linn., Syst. Nat., i, p. 501 (1758).

All the specimens belong to the form *konewkai*, Freyer.

Abundant in April at Sharf-at-Akab, Tangier.

3. *Cymbalophora pudica*, Esp., Schmett., iii, p. 177, pl. 33, f. 1 (1784).

Abundant in August and September. The larva, which feeds on various grasses, spins a slight cocoon in the

bottom of thick herbage, but remains in its larval state until within about fourteen days of emerging.

4. *Utetheisa pulchella*, Linn., Syst. Nat., i, p. 534 (1758).

Locally and sporadically very abundant in August and September.

NOCTUIDÆ.

AGROTINÆ.

5. *Chloridca dipsacca*, Linn., Syst. Nat., xii, p. 856 (1766).

Forest of Marmora.

Very common the end of March. Flying by day, 1902.

6. *Chloridca peltigera*, Schiff., Wien Verz., p. 89 (1776).

Distributed throughout the central plains of Marocco. June and July, 1901.

7. *Euxoa segetis*, Schiff., Wien Verz., ii, 81, 252, ff. 3. a. b. (1776).

Common at Tangier in spring and autumn.

8. *Euxoa spinifera*, Hübn., Samml. Eur. Schmett. Noct, f. 389 (1827).

Tangier.

9. *Agrotis ypsilon*, Rott., Naturf., ix, p. 141 (1776).

Tangier, May 1901.

10. *Agrotis comcs*, Treit., Schmett. Eur., v, 1, p. 254 (1825).

Tangier. One specimen.

11. *Agrotis pronuba*, Linn., Syst. Nat., i, p. 512 (1758).

The only one seen, September 1901.

Tangier. Two specimens.

12. *Agrotis c-nigrum*, Linn., Syst. Nat., x, p. 516 (1758).

Bred from dug pupa, March 1902.

13. *Episilia faceta*, Treit., Schmett. Eur., x, 2, p. 35 (1836).

Very common at Tangier throughout the winter.

14. *Lycophotia margaritosa*, Haw., Lep. Brit., p. 218 (1809).

Bred from dug pupa, March 1902.

HADENINÆ.

15. *Mamestra oleracea*, Linn., Syst. Nat., ed. x, p. 517 (1758).

Bred from dug pupa, March 1902.

16. *Mamestra chrysozona*, Bork., Eur. Schmett., iv, p. 264 (1792).

Forest of Marmora, Ensar. Forest of Marmora, April 1902.

17. *Leucania l-album*, Linn., Syst. Nat., ed. xii, p. 850 (1766).

Ensar. Forest of Marmora, April 1902.

18. *Leucania loreyi*, Dup., Lep. Fr., vii, 1, p. 81, pl. 105, f. 7 (1827).

Central plains, June 1901.

19. *Glottula pancrati*, Cyr., Ent. Neap., pl. 12, f. 4 (1787).
Tangier.

CUCULLIANÆ.

20. *Cucullia chamomillæ*, Schiff., Wien Verz., p. 73 (1776).
Very abundant in January and February, 1902.

21. *Cucullia tanaceti*, Schiff., Wien Verz., p. 73 (1776).
Tangier.

22. *Bombycia riminalis*, Fabr., Gen. Ins., p. 284 (1777).
Forest of Marmora.
Came to light on March 28th, 1902.

23. *Clocophana dejeani*, Dup. Lep. Fr., vii, p. 115 (1827).
Came to light at Sharf-at-Akab, Tangier, April 1901.

24. *Clocophana pauli*, Staud., Iris., iv, p. 306, pl. 4, f. 4 (1891).

(Plate XIX, fig. 11, ♀.)

Forest of Marmora, April 27th. Flying by day.

25. *Cleophana diffluens*, Staud., Berl. Ent. Zeit. 1870, p. 121.

(Plate XIX, fig. 12, var. *maroccana*, ♂.)

Forest of Marmora, at light March 27th, 1902. The variety *maroccana*.

26. *Metopoceras felicina*, Donz., Ann. Soc. Ent. Fr., 1844, p. 199, pl. 6, f. 2.

Forest of Marmora, at light March 27th, 1902.

ACRONYCTINÆ.

27. *Brotolomia meticulosa*, Linn., Syst. Nat., p. 513 (1758). Only saw three in Marocco, March 1901.

28. *Euplexia solicri*, Boisd., Ind. Meth., Errat., p. 4 (1829). Tangier, September 1901.

29. *Acronycta rumicis*, Linn., Syst. Nat., p. 516 (1758). Tangier.

30. *Acronycta megacephala*, Fabr., Mant. Ins., p. 175 (1787).

Tangier, September 1901.

31. *Laphygma quadripunctata*, Fabr., Syst. Ent., p. 594 (1775).

Tangier.

32. *Amphipyra eriopoda*, Herr.-Schäf., Eur. Schmett., ii, p. 413, f. 596 (1851).

Tangier.

CATOCALINÆ.

33. *Catocala conversa*, Esp., Schmett., f. 105 (B) 1-2 (1787).

Tangier. The variety *ayamos*, Hübn.

34. *Catocala oberthuri*, Aust., de. Nat. 1879, p. 85.

Very common, August and September. Tangier.

35. *Ophiusa tirrhava*, Cram., Pap. Exot., ii, p. 116, pl. 172, E (1780).

Not common, Sharf-al-Akab. Tangier, April 1901.

36. *Ophiusa algira*, Linn., Syst. Nat., ed. xii, p. 836 (1766).

Tangier.

37. *Ophiusa lunaris*, Schiff., Wien. Verz., p. 94 (1776).

Forest of Marmora. March 28th, 1902.

38. *Grammodes geometrica*, Fabr., Syst. Ent., p. 599 (1775).

Tangier.

39. *Grammodes stolidus*, Fabr., Syst. Ent., p. 599 (1775).

Tangier.

PLUSIANÆ.

40. *Plusia gamma*, Linn., Syst. Nat., i. p. 513 (1758).

Abundant everywhere.

NOCTUINÆ.

41. *Apopstes spectrum*, Esp., Schmett., iv, p. 131, pl. 100, ff. 3, 4 (1786).

Common at Tangier in summer. These specimens were bred from pupa found in May, near Fedulla, on the West Coast. The white silk cocoons were abundant, and attached to *Euphorbia* on the sea coast.

ERASTRIANÆ.

42. *Callopietria latreilli*, Dup, Lep. Fr., vii, p. 329, pl. 120, f. 2 (1827).

Taken on Olive, above Amsmiz in the Great Atlas (1901).

43. *Tarache lucida*, Hübn., Berl. Mag., iii, p. 302 (1767).

Very common, on the plain near Fedulla in May 1901. The variety *albicollis*, F.

44. *Tarache luctuosa*, Esp., Schmett., pl. 88, f. 4 (1786).

Tangier.

45. *Eublemma ostrina*, Hübn., Eur. Schmett. Noct., f. 399 (1827).

Tangier, February 1902.

HYPENINÆ.

46. *Zanclognatha crinalis*, Treit., Schmett. Eur., vii, p. 17 (1829).

Tangier, February 1902.

47. *Hyppena obsitalis*, Hübn., Eur. Schmett. Pyr., ff. 164-165 (1827).

Tangier.

48. *Hyppena lividalis*, Hübn., Beitr., ii, 4, pl. 1, E (1827).

Tangier, December 1901.

LYMANTRIDÆ.

49. *Euproctis chrysorrhœa*, Linn., Syst. Nat., p. 502 (1758).

Tangier.

50. *Lymantria dispar*, Linn., Syst. Nat., p. 501 (1758).

Tangier.

51. *Lymantria atlantica*, Ramb., Faun. And., pl. 15, f. 7 (1838).

Tangier.

SPHINGIDÆ.

ACHERONTIANÆ.

52. *Acherontia atropos*, Linn., Syst. Nat., i, p. 490 (1758).

Tangier.

The only one seen or heard of, September 1901.

AMBULICINÆ.

53. *Smerinthus populi*, Linn., Syst. Nat., p. 489 (1758).

Tangier. The variety *austanti* ab. *incarnata*.

CHEROCAMPINÆ.

54. *Deilephila lineata*, Fabr., Syst. Ent., p. 541 (1779).

April and May, flying by day as well as in evening.
Tangier.

55. *Cherocampa celerio*, Linn., Syst. Nat., i, p. 491 (1758).

Very common. Tangier in September, comes to *Plumbago* at sunset.

MACROGLOSSINÆ.

56. *Macroglossa stellatarum*, Linn., Syst. Nat., i, p. 493 (1758).

Very abundant everywhere.

NOTODONTIDÆ.

57. *Dicranura vinula*, Linn., Syst. Nat., i, p. 499 (1758).

Tangier, 1901.

Saw many old cocoons on Aspen and Willow, but only two containing living pupæ, from one of which this species emerged.

58. *Phalera bucephala*, Linn., Syst. Nat., p. 508 (1758).

Tangier. The variety *bucephalina*.

GEOMETRIDÆ.

BOARMIANÆ.

59. *Opisthograptis lutcolata*, Linn., Syst. Nat., p. 525 (1758).

Tangier.

60. *Eurranthis pennigeraria*, Hübn., Eur. Schmett., Geom., f. 363 (1827).

Akba Hamra. The variety *chrysitaria*, H. G.

61. *Aspilates ochrearia*, Rossi, Mant., ii, p. 53, pl. 7, N (1794).

Forest of Marmora. Metradia. Ras Doura.
Abundant; a day-flyer. March 1902.

62. *Amygdaloptera testaria*, Fabr., Ent. Syst., p. 143 (1794).

Forest of Marmora.
Abundant; a day-flyer. March 1902.

63. *Filonia famula*, Esp., Schmett., iv, pl. 106, f. 4 (1787).

Forest of Marmora. In extraordinary abundance.
March 1902.

64. *Thamnonoma gesticularia*, Hübn., Eur. Schmett. Geom., ff. 472-3 (1827).

The only specimen seen. February 1902. Tangier.

65. *Thamnonoma semicanaria*, Frr., Beitr., 78, 2, 1, p. 145 (1833).

Tangier, Bubana. March 1901.

66. *Selidosema erictaria*, Vill. Linn., Ent., ii, p. 329, pl. 6, f. 9 (1789).

Tangier.

67. *Gnophos asperaria*, Hübn., Eur. Schmett., Geom., f. 484 (1827).

Tangier. March 1902.

68. *Boarmia* (?) *gemmaria*, Brahm., Ins. Kal., ii, p. 255 (1791).

More uniform above, and more fulvous below, than the typical form.

The only one seen March 1902. Tangier.

69. *Boarmia abietaria*, Goeze, Beitr. iii, 3, p. 439 (1781).

Forest of Marmora. March 27th, 1902.

70. *Boarmia abruptaria*, Thnb., Diss. Ent., iv, p. 59, pl. iv, f. 8 (1792).

Very common in winter at Tangier.

71. *Boarmia atlanticaria*, Standl., Stett. Ent. Zeit., 1859, p. 218.

Only one taken, March 1902. Tangier.

LARENTIANÆ.

72. *Sterrha sacroria*, Linn., Syst. Nat., ed. xii, p. 863 (1766).

Tangier.

73. *Anaitis plagiata*, Linn., Syst. Nat., i, p. 526 (1858).

Common at Tangier in winter.

74. *Cidaria malvata*, Rmbr., Ann. Soc. Ent. Fr., 1832, p. 43, pl. 2, f. 5.

Tangier. October 1901, only one seen.

75. *Cidaria siterata*, Hübn., Berl. Mag., iv, p. 522 (1769).

Tangier, February 4th, 1902. Given me by Lord Walsingham.

76. *Cidaria basochesiata*, Dup., Lep. Fr., viii, 1, p. 559, pl. 210, f. 5 (1831).

Tangier. February 2nd, 1902. Given me by Lord Walsingham.

77. *Eupithecia oblongata*, Thnb., Diss. Ent., i, p. 14, f. 12 (1784).

Near Tangier, at Ain Zeitun. February 1902. Common.

GEOMETRINÆ.

78. *Pseudoterpna coronillaria*, Hübn., Eur. Schmett., Geom., ff. 479-482 (1827).

Near Tangier, at Ain Zeitun. February 1902.

ACIDALIANÆ.

79. *Rhodostrophia sicaniaria*, Zell., Stett. Ent. Zeit., 1852, p. 180.

Atlas Mountains, Inmentalla. 5,000 feet. July 9th, 1901.

80. *Ephyra pupillaria*, Hübn., Eur. Schmett., Geom., f. 69 (1827).

Bred from larva. March 1901.

81. *Acidalia perpusillaria*, Ev., Bull. Mosc., 1847, iii, p. 82, pl. 6, f. 7.

Given me by Lord Walsingham, February 1902.

82. *Acidalia elongaria*, Rmbr., Ann. Soc. Ent. Fr., 1833, 38, pl. 2, f. 20.

Tangier. March 1901.

83. *Acidalia subsericeata*, Haw., Lep. Brit., p. 352 (1809).

Forest of Marmora. March 1902.

LASIOCAMPIDÆ.

84. *Taragama repanda*, Hübn., Eur. Schmett., Bomb., ff. 274-5 (1827).

The larva of this species may be found in all stages of growth all the year round, with perhaps the exception of the months of August and September; it varies remarkably in colouring, individuals being found in all shades of grey and brown to black with violet dots. It will feed on almost anything, but a prickly broom, *Genista tricuspidata*, appears its favourite food plant; it is very abundant in the neighbourhood of Tangier, and I also saw it at Tetuan and Rabat.

85. *Puchygastris trifolii*, Schiff., Wien Verz., p. 57 (1776).

The same remarks practically apply to this larva, which may be found universally in numbers all the year round. It is much more abundant than the last, and varies greatly in colour; it will feed on almost anything.

86. *Macrothylacia rubi*, Linn., Syst. Nat., ed. x, p. 498 (1758).

Subsp. *digramma*, Meade-Waldo, subsp. n.

(Plate XIX, fig. 10, ♀.)

Deep red-brown: antennæ ochreous-white above. Fore-wing with fine oblique white antemedian line from subcostal nervure to vein 1, very slightly excurved below the cell: a fine white post-medial oblique line arising from vein 10, incurved to above 7, excurved to vein 2, then straight to inner margin. Differs from the typical form in the uniform dark chocolate colour, the white lines of fore-wing being fine and farther apart, and the uniform chocolate ciliae of both wings. Exp. 86-94 mm.

Hab. TANGIER.

I also took plenty of larvæ at Babara. It frequents large tracts of *Lentiscus* and *ilex* scrub. The larva feeds on *Pistacia lentiscus* and *Quercus ilex*; it hibernates curled up in December, spins a slight cocoon in March, and emerges the beginning of April. Although carefully sought for we never saw a male. I only saw one form of larva, dark chocolate brown.

87. *Malacosoma franconica*, Esp., Schmett., pl. 26, f. 1-2 (1784).

Tangier.

COSSIDÆ.

88. *Zeuzera pyrina*, Linn., Faun. Suec., p. 306 (1761).

Tangier.

PSYCHIDÆ.

89. *Oreopsyche albida*, Esp., Schmett., ii, p. 391, pl. 78, f. 2 (1787).

The variety *lorquiniella*, Bruand.

Common in the forest of Marmora, March 1902, flying by day, and attracted apparently by the dead birds, etc., that were lying by us as we sat at lunch, hovering over them and possibly mistaking their smell for that of the female.

ZYGÆNIDÆ.

90. *Zygæna carniolica*, Scop., Ent. Carn., p. 189 (1763).

The variety *orana*, Dup.

Laraishe, April 3rd, 1902.

91. *Zygæna favonia*, Fr., Beitr. Eur. Schmett., v, p. 76, pl. 428, f. 1 (1845).

Zygæna aurata, Blachier, Bull. Soc. Ent. Fr., 1905, p. 213.

Two varieties (1) *aurata* mostly clothed with fulvous to whitish hair, the abdomen with two crimson bands on terminal segments, the fore-wing pale brassy golden yellow. (2) *favonia*: thorax with few whitish hairs; abdomen with one crimson band, fore-wing blackish. Very abundant at great heights on the Atlas, up to 12,400 ft., in July on Tizi Gourzá.

92. *Proeris orana*, Aust., de. Nat. ii, p. 284 (1880).

Taken on grass at Imi Ouern on a branch of the Oual Amsmiz, July 11th, 1902, about 9,000 ft.

PYRALIDÆ.

SCHÆNOBIANÆ.

93. *Scirpophaga prælata*, Scop., Ent. Carn., No. 198 (1763).

Ras Doura. April 1st, 1902.

PHYCITINÆ.

94. *Myelois cribrella*, Hübn., Eur. Schmett., Tin., f. 67 (1827).

Ras Doura. April 1st, 1902.

95. *Acrobasis porphyrella*, Dup., Lep. Fr., x, p. 191, pl. 279, f. 2 (1836).

Forest of Marmora. March 7th, 1902.

PYRALINÆ.

96. *Cledocbia interjunctalis*, Guen., Luc, Expl. Alg., p. 398 (1848).

Ras Doura. April 1st, 1902.

HYDROCAMPINÆ.

97. *Nymphula stratiotata*, Linn., Syst. Nat., i, p. 529 (1758).

Forest of Marmora. March 1902.

PYRAUSTINÆ.

98. *Phlyctænodes palcalis*, Schiff., Wien Verz., p. 123 (1776).

Forest of Marmora. March 1902.

99. *Mecyna polygonalis*, Hübn., Vog., p. 76 (1827).

Forest of Marmora. March 1902.

100. *Pyrausta flavalis*, Schiff., Wien Verz., p. 121 (1776).

The Atlas.

EXPLANATION OF PLATES XVIII, XIX.

PLATE XVIII.

Sketch map showing Mr. Meade-Waldo's route in Marocco.

PLATE XIX.

- FIG. 1. *Cenonympha caucheri*, ♂, p. 377.
 2. " " ♀, p. 377.
 3. *Satyrus mnisechi*, var. *maroccana*, ♂, p. 375.
 4. " " " " ♀, p. 375.
 5. *Lycæna hylas*, var. *atlantica*, ♂, p. 380.
 6. " " " " ♀, p. 380.
 7. *Euchloë eupheno*, ♀ var. *androgynæ*, p. 372.
 8. *Teracolus दौरا*, var. *nouna*, ♂, p. 372.
 9. " " " " ♀, p. 372.
 10. *Macrothylacia rubi*, subsp. *digamma*, ♀, p. 390.
 11. *Cleophana pauli*, ♀, p. 383.
 12. *Cleophana diffluens*, var. *maroccana*, ♂, p. 384.

XXII. *A new species of the Hymenopterous Genus Megalyra*, Westwood. By J. CHESTER BRADLEY, Ithaca, N.Y., U.S.A. Communicated by Col. C. T. BINGHAM, F.Z.S.

[Read November 1st, 1905.]

I FIND among some material from the American Museum of Natural History an undescribed species of *Megalyra*. In order that its position may be readily seen I append a translation of a table to the genus published by Szepliget in the "Természetráji Füzetek," xxv, p. 526, adding the new species in its proper place.

1. Wings black, short, scarcely longer than the head above.
Mutilis, Westwood.
Wings not shorter than normal (2)
2. Wings black or brown (3)
Wings hyaline, with brown crossbands (5)
3. Wings black, almost opaque, with a hyaline spot; forehead and vertex longitudinally grooved . . . *Shuckardii*, Westwood.
Wings more or less brown, without a hyaline spot; forehead and vertex not longitudinally grooved (4)
4. Entirely black; head, venter, legs, and propodeum heavily clothed with grey hair; a hairy spot on the side of each abdominal segment . . . *Melanoptera*, Schletterer.
Base of the antennæ, legs beyond the femora, and the abdomen red; not heavily clothed with hair; the abdomen without hairy spots *Rufiventris*, Szepliget.
5. The posterior ocelli further removed from each other than from the compound eyes (6)
The posterior ocelli equally removed from the compound eyes and from each other (7)